Model Railroad Hobbyist |

DCC IMPULSES

column

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Loading sounds into DCC decoders

This month we are going to discuss sound decoders. See “Mr. DCC's Workbench” at the end of this column for an insight into new firmware for LokSound Select diesel decoders.

There are two basic forms of DCC sound decoders. Those that allow you to load sounds into them and those that don’t. In this column, I’m going to look at those that do, what you can do with them, and what it takes to customize them to your liking.

There has been a long-standing discussion about sound loading. Some folks, such as SoundTraxx, have taken the view that the sound recording and editing are essential to their product. They have chosen to keep their sounds close to the vest. They do not provide for user sound installation. This viewpoint is great for non-technical folks who want to install a decoder, do a modest amount of personalization of the loco, and run.

As this column was being written, SoundTraxx announced the Tsunami2 series of flagship decoders, without user-loadable sounds. This shows their commitment to this business plan. I'll review their new decoder as soon as I get one.

If the user is able to download software into the decoder, then a bunch of options open up:

- Changing the functional software as much as the hardware will allow
- Changing the sound set to a newer or different recording
- Installing your own sounds

- Mixing and matching sounds -- this whistle with that horn and the other motor sound
- Fixing software bugs in the field without the need to remove the decoder from the loco and send it back to the factory

Another discussion surfaced along the way: allowing folks to record and mix and install their own sounds might reflect poorly on a specific brand of decoder.

If a modeler shows up with a loco with sounds that he loaded into an XYZ brand decoder and the horn has a dog barking in the background, the result would be a derogatory view of XYZ decoders. My argument is: whatever we modelers present is a view of our work, not the manufacturer behind it. If I do a lousy job of weathering an Atlas car, it reflects on me, not on Atlas.

Similarly if I do a poor job of recording and mixing and loading sounds into a decoder, it is not the fault of the decoder manufacturer. But I'm sure not all modelers will see it that way.

The roster

Quickly, before we begin, I want to talk about having a roster of your locomotives. Whether you spend minutes or hours per loco getting them set up just the way you want them, it is nice to have your work saved outside the loco. For this, I recommend DecoderPro.

To fully utilize DecoderPro, you will generally need an interface between your computer and your DCC command station. I discussed some options in a prior column. Once the computer connection is functional, install the free JMRI suite of programs (**jmri.org**), which includes DecoderPro.

Even if you don't want to make the computer connection, you can install DecoderPro on your computer and use it to customize your locos. Just tell DecoderPro what you want the decoder to do. Let it calculate the corresponding CV values and store them on your computer. Manually punch the resulting CV values into the DCC system to set up the loco. It is the hard way to go, in my opinion, but some folks don't want to deal with the computer connection.

Older DCC systems may need a Programming Track Booster (PTB) to read from some sound decoders. See my website for more information about PTBs

The sound loader packages that I'll be discussing here do not handle a roster at all well unless every decoder is their brand. That's why I use the sound loaders for their intended purpose and let DecoderPro track my CV customization.

Windows and drivers

A program runs under an operating system (such as Windows). However, there is a bit of software, known as a driver, which allow the program to talk to hardware outside of the computer.

These drivers tend to be very operating system-specific. Having the wrong one won't degrade performance; it will bring it to a complete halt.

Microsoft has been encouraging third-party software developers to submit their driver packages for review. If they were determined worthy, Microsoft would "sign" the driver. This sign is a secret handshake between the driver and the operating system that lets them both know that they are supposed to be friends. Rumor has it that money is exchanged for this approval, penalizing the small developers.

Signed drivers were encouraged for Windows 8. Microsoft has made it impossible for Windows 10 to automatically install a driver that is not signed. As you'll see here, there is a work-around, but it isn't pretty.

Let's look at loadable sound decoders by manufacturer, alphabetically.

Digitrax sound decoders

Digitrax offers their sound decoders [1] in many form factors for different installation options. They also offer a sound-only variant (Soundbug). The Soundbug is designed to plug into the Digitrax DH165 series of decoders. It can be hard wired to most other non-sound decoders, but may have some CV conflicts with non-Digitrax decoders. Thus, it may require a dual-decoder installation when mixed with non-Digitrax decoders. I discussed this sort of installation in a prior column.

1. Digitrax SDH166D sound decoder. ***Digitrax photo***

The Digitrax decoders come with some sound sets pre-loaded. Exactly what is loaded varies by decoder model.

Their initial products had 8-bit sound, offering sound quality similar to the old landline telephones. Newer products are offering 16-bit sound with the potential for much better sound quality. In some product categories, they offer both versions. The 8-bit version remains as an economical alternative, saving $20 or so per decoder. There appears to be little or no physical indication of which version a specific decoder has. You might want to make your own notes on the decoder as you are removing it from the packaging.

Digitrax has always encouraged modelers to record, edit and load their own sound sets. They even have a page on their web site (**digitrax.com/sound-depot**) for users to share their creations amongst themselves. This business plan has the users creating most of the sound files.

2. Digitrax PR3XTRA programmer. ***Digitrax photo***

The PR3XTRA [2] is the current version of the Digitrax programmer for sound loading. The installation is simple: connect your Windows computer to the PR3XTRA with a USB cable. Load the software. Connect a stretch of track to the appropriate terminals on the PR3XTRA. Connect the power supply and go.

According to the Digitrax web site, their SoundLoader software (**digitrax.com/sound-depot/soundloader**) is compatible with Windows versions from XP through 8. I asked Digitrax for the loan of a unit for this column and they declined. Thus, all I can report about current products is

what information there is on their website. I worked with the predecessor hardware and software during my tenure at Litchfield Station, so my personal experience is dated.

Two functions of the PR3XTRA are not related to sound loading. It can provide a connection between a Digitrax DCC system and a USB-equipped computer for operation with programs such as JMRI or Railroad & Co. JMRI runs under Java on Windows, Mac OS X or Linux computers. The JMRI / PR3XTRA combination allows software updates to some of the Digitrax hardware.

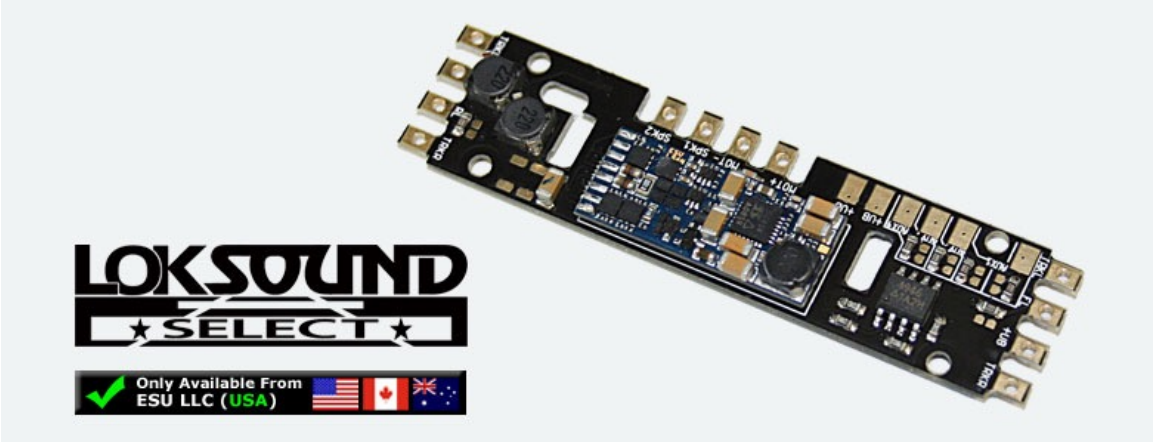
Additionally, the PR3XTRA can be configured as a stand-alone programmer. Connect a computer via USB and a piece of track and power supply. Then you can use DecoderPro to adjust CVs and save rosters.

ESU LokSound

One of the pioneers of loadable sound decoders is ESU with its LokSound line. When these decoders were first imported to the USA, they offered a disappointing selection of American sounds. Since Matt Hermann has taken over the North American operations, lots of new sounds and options have been added to the LokSound lineup. See my December 2014 column (**TINY URL for model-railroad-hobbyist.com/magazine/mrh-2014-12-dec/di_loksound-dcc**) for more details.

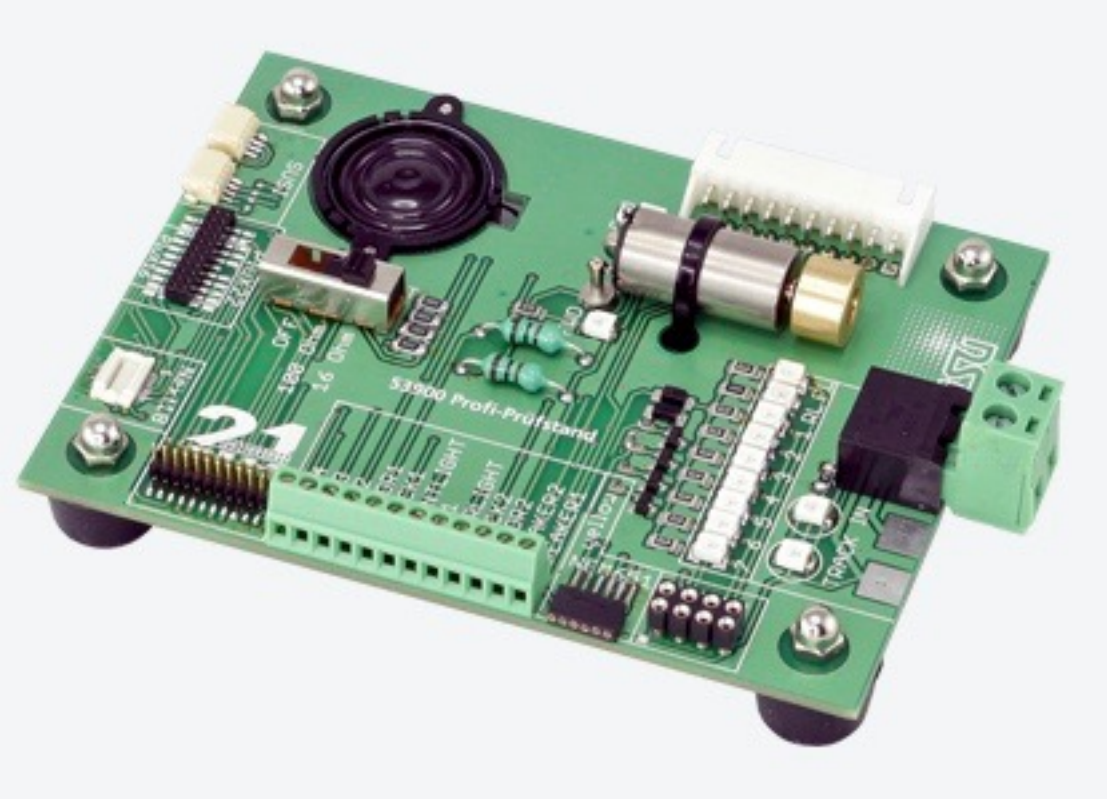
Their current sound decoders come in two versions: LokSound V4.0 and LokSound Select. Both versions are available in the "micro" size aimed at N-gauge installations and the more cost-effective "standard" size. The LokSound XL (O-gauge and larger) is only available in the V4.0 version. The difference between the two versions is that the less expensive Select allows the user to load pre-set packages, The V4.0 version allows complete user customization of all of the sounds and functions. ESU offers a wide variety of files to load into a Select or as a starting point for customization for a LokSound V4.0. These files are on their website (**esu.eu/en/downloads/sounds**).

3. LokSound Select Direct decoder is designed to replace the factory light board in many HO-gauge locos. ***ESU photo***



When it comes time to set up your decoder and load sounds, ESU has you covered with a really neat decoder tester [4] and their LokProgrammer [5].

4. ESU Decoder Tester. ***ESU photo***



I use the ESU Decoder Tester [4] all the time. This tester can be used with any DCC system or programming interface. It provides many different plugs

and terminals to connect to the decoder under test. There are lots of loads to test the outputs of the decoder: 6 LED lights, a motor and a speaker (selectable for 100 or 16 ohm impedance or off). The decoder tester retails for about $50.

5. LokProgrammer from ESU will load sounds and automate CV programming for LokSound decoders. ***ESU photo***

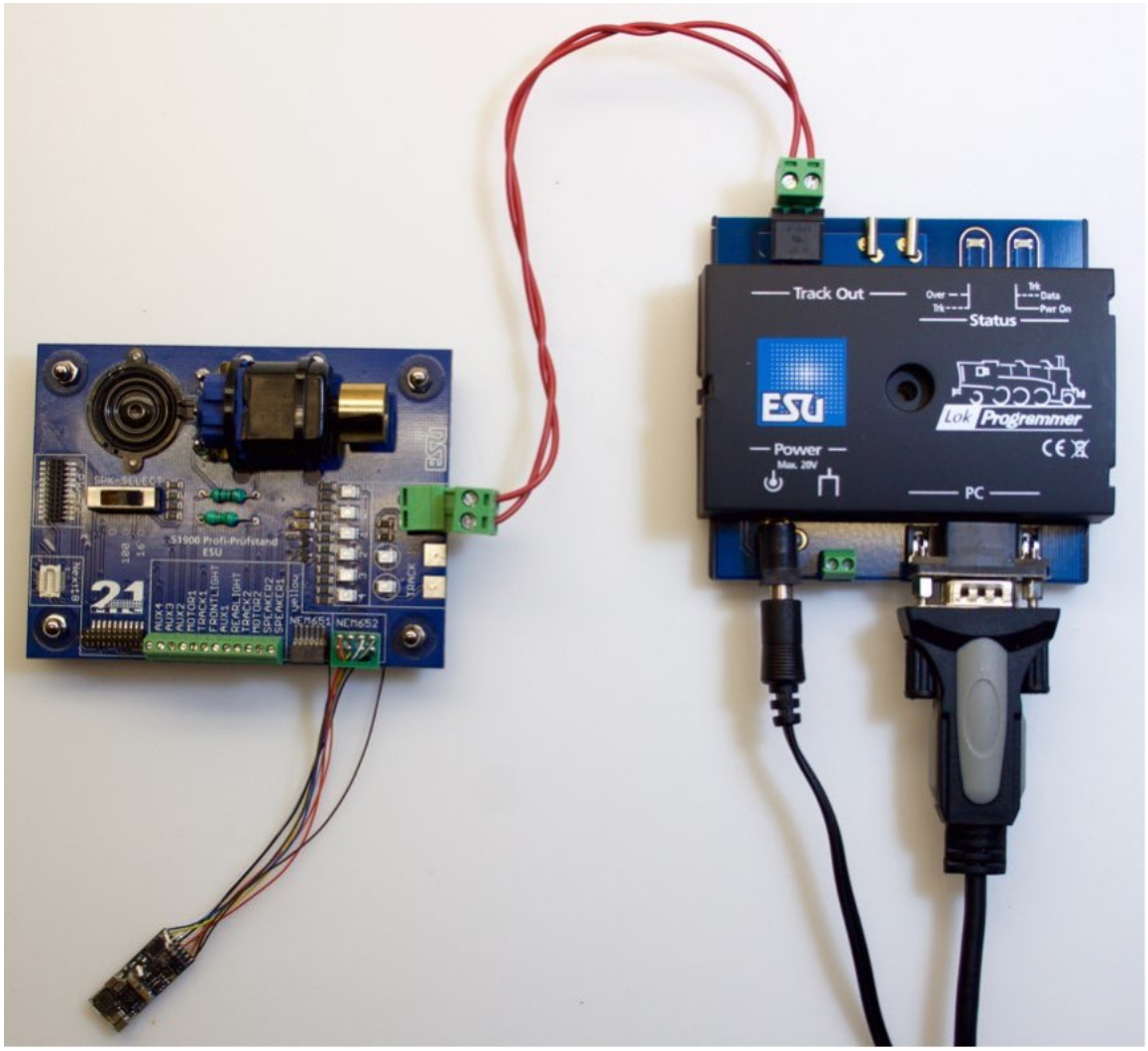
ESU makes the LokProgrammer [5] to load sounds and program decoders. This unit has the old style (RS232) serial port for the computer connection. However, ESU includes a serial to USB converter that works transparently with the LokProgrammer. Thus, the LokProgrammer will work with almost any PC ever built. Windows support is for all versions from XP to 10. The drivers are signed and included with the LokProgrammer software package. That way, the user doesn't have to jump through hoops and disable Windows safeguards to install the software or search around the internet for the correct driver.

I installed the unit on my notebook computer (running Windows XP). It was as simple as running the LokProgrammer installation program and selecting the option to install the drivers for the USB adapter. Once the software

installation was complete, I plugged the LokProgrammer in. Windows XP automatically configured the package and I was up and programming decoders [6] in a few minutes.

I later updated the software from 4.4.22 to 4.4.23. It was easy and seamless.

6. LokProgrammer and ESU Decoder Tester programming a LokSound micro V4.0 decoder.



Using the LokProgrammer software is not as intuitive as I'd like. Once you work your way around the software and hardware it is fine. It just took some trial and error and seat time for me to get comfortable. ESU comes to your rescue with a user's-forum (**TINY URL for http://www.esu.eu/en/forum/forums-overview/**). Help can be had there. You only need to sign up to play

in their sandbox. Discussion of the ins and outs of this system could easily fill a column.

The LokProgrammer will operate the decoder / loco combination for testing in between adjustments. The LokProgrammer and the power supply that comes with it will give about ½ amp at about 12 volts. An external supply as large as 20 volts and 3 amps will run almost any loco. The LokProgrammer doesn't have short circuit protection appropriate for operating on a full layout. Keep with just a test track.

QSI Titan

QSI offers sound and power decoders for HO gauge and "large" gauge locos. Their third version decoders, called Titan, feature what they call "stereo." My initial reaction to their announcement was lukewarm. My concept was based on my idea of generating a stereo sound image right to left in front of the listener. I couldn't get my arms around how that was going to work out in a narrow model train heading down the track.

Once I played with one, I found that it is dual-channel audio and that is cool. There are two speaker outputs and you can use a pan control to move sounds between speakers. For example, put a small speaker in the smoke box of a steam loco and route the whistle, bell and dynamo sounds there. A larger speaker in the tender can get the deeper sounds, like the chuff. Or put most of the chuff in the heavier bass speaker and just a bit of it into the smaller speaker for more bite. This also allows the sound to be dispersed between the loco and tender. Yes, it can require more wires between the loco and tender to fully implement.

This dual-channel audio also creates more things to set up, making a computer-based system very helpful. The QSI Quantum Programmer is a very similar product to the ESU LokProgrammer. The Quantum Programmer hardware [7] is a small plastic tube with power and USB connectors on one end and track connector and status LEDs on the other.

The QSI software is Windows-based. They offer support for Windows XP through 10. The QSI drivers are not signed. QSI has step-by-step work-around instructions for Windows 8 and Windows 10 users to install them.

7. **Quantum Programmer from QSI.** ***QSI photo***

My XP computer has had the QSI software installed for many years. So, I chose not to uninstall and reinstall the software for this column. However, I did go to their web site (**TINY URL for http://www.qsisolutions.com/#!applications/cfvg**) and download the latest versions of CV Manager and QSI Update, the support software for the Quantum Programmer. There is a third piece of software, Q1a Upgrade, to update older QSI chips with more recent software. The affected decoders have not been available on the retail market for about a decade. Thus, the software is of minimal use now. I didn't check for a new version of my Q1a Upgrade software. The Windows USB drivers, from SI Labs, are also cached there.

The installation of the updated software was seamless and didn't require (for my XP system) any changes in the USB driver. The QSI documentation (**TINY URL for http://www.qsisolutions.com/#!quantum-programmer-documents/cevq**) seems adequate for walking a knowledgeable user through the installation of the un-signed drivers on newer Windows systems.

Once you have the Quantum Programmer working with your computer, things are pretty peachy. No, it isn't perfect, but it is more intuitive to me than the LokProgrammer software.

The QSI Programmer will operate the decoder / loco combination for testing in between adjustments. The power supply will give about ¾ amp at about 15 volts. Again, this is not for running a layout, but for a simple test track.

The CV Manager software does a good job of programming and keeping track of the values stored in a fleet of QSI locos. But, unless every loco you have has a QSI decoder, a computer interface and DecoderPro are more versatile for keeping your roster.

ZIMO

Art Luescher, the North American importer for ZIMO, provided me some insight into their products. I haven't had my hands on them, so I must rely on his comments.

ZIMO sound decoders come with 6 steam and 1 diesel engine sound preloaded. The customer can chose amongst those sounds on the fly.

The MXULFA update-and-program module allows the user to update their own sound. The sounds can be loaded onto a USB flash drive and installed through the ZIMO command station.

Sound is available from the ZIMO website (**http://www.zimo.at/web2010/sound/tableindex_EN.htm**).

ZIMO is promising a lot more U.S. diesel sounds coming this year.

ZIMO sounds come in three versions.

"Pre-loaded" sounds are those that are loaded into the decoder at the factory. They can be used, removed and reinstalled at will.

A second class of sounds are the "Free" sounds that can be downloaded from the ZIMO website and installed as desired.

ZIMO also has third-party vendors who provide sounds through the ZIMO web site for a fee.

Whichever sounds you choose, the ZIMO MXULFA hardware and the associated software are your gateway to installing them.

Summary of hardware and software

I don't recommend the choice of sound decoder based solely on the sound loading hardware and software. Look at the total package, including:

- Sound quality
- Features
- Ease of loading and modifying sound files and decoder operation
- Cost of both the sound loader and the decoders

In the world of loadable-decoders, ESU's LokSound product stands head and shoulders above the rest, in my opinion. Their attention to sound quality and locomotive operation is exemplary, especially in the American diesel regime. While their sound loading and decoder management software is a challenge to get started with, it is solid and will work well for most users. The somewhat higher price of the LokProgrammer (about double that of the Digitrax or QSI units) is a bit unhinging. However, you should only have to buy one unit for your pike, while you will probably be buying many decoders.

QSI's units are second in my book. Their pricing is good. The "stereo" sound has some fine uses. Their market share seems to have slipped recently and there seems to be little support for new sounds. Hopefully, this will change.

I hear lots of good things from ZIMO users about their product. I didn't have the hardware to tinker with them and they are definitely the "high-priced spread."

Digitrax has never convinced me that their heart is in sound decoders. I feel as if they felt they needed to jump into a market that they didn't really understand and aren't seriously committed to. That said, I haven’t experienced their 16-bit sounds, either.

Use one (or more) of these hardware and software combinations to load firmware and sounds into the decoder. Nothing here replaces a computer interface and DecoderPro to tweak your decoders and back up your work onto your computer.

One last thought. Unless you are going to tweak sounds as a hobby, you may not need a sound loader. Routine adjustments and additions may be

programmed for you by your favorite DCC dealer. Even if they charge a modest sum for their work, you may be money ahead having them do the work for you.

Here is a chart [8] of the characteristics of the different programming units.

8. Sound loading hardware and software packages from various vendors.

Mfr	Unit	MSRP	Input	Windows		
				drivers	Signed	program
Digitrax	**PR3XTRA**	$84.95	USB 2.0	XP, Vista, 7, 8	No	SoundLoader
ESU	**LokProgrammer**	$199.99	RS232 + adapter	XP, 7, 8, 8.1, 10	Yes	LokProgrammer
QSI	**Quantum Programmer**	$89.95	USB 2.0	XP, 7, 8, 8.1, 10	No	Quantum Update / CV Manager
ZIMO	**MXULFA**	$270.10	USB 2.0	?	?	ZSP (ZIMO Sound Programmer)

Please share your experiences, ideas and (especially) programming experiences. Just click on the Reader Feedback icon at the beginning or the end of the column. While you are there, I encourage you to rate the column. “Awesome” is always appreciated. Thanks.

Until next month, I wish you green boards in all your endeavors.

Coming up next is “Mr. DCC's Workshop” and a new LokSound project file.

Mr. DCC's Workshop

LokSound Full Throttle diesel sound decoders

In June 2016, ESU released the Full Throttle series of LokSound Select sound projects. These innovative products provide one of the most realistic sound sets in current decoder technology.

I had a LokSound Micro Select decoder kicking around the shop and was able to install the new version of the Full Throttle software package. I downloaded the package from the LokSound site and installed it using version 4.4.23 of the LokProgrammer software. Version 4.4.21 is the earliest version that will work with these new sound files. The files can be installed in any Select or V4.0 LokSound decoder.

This software was demonstrated on the MRH web site on Mike Confalone's layout. The video is referenced on the thread. If a picture is worth 1000 words, then a video is worth a million. I recommend you watch the video.

While this level of realism may not trip the trigger of operators enough to have them do the extra work to make it happen, some folks are raving. One of the members of the PebbleCreek Model Railroad Club -- a railroader since the early 1950s -- is extremely excited. His comment was something like, "That's EXACTLY how they should sound."

The new independent brake function works with the decoder to provide a realistic switching scenario, too. I doubt that many serious operators will want to follow the protocols to make it function prototypically, but it makes for good theater.